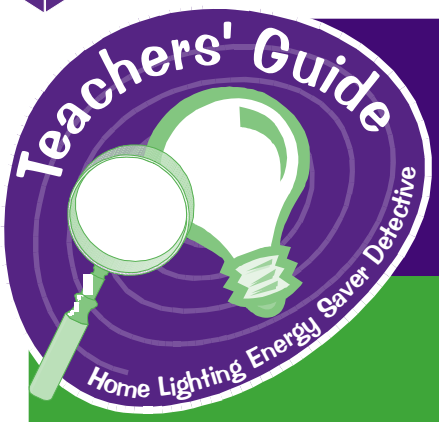

Overview: Activity Two

Electricity is one form of energy that is useful to just about everyone. Individuals who use energy-efficient lights can take advantage of this valuable power source at a lower cost with less impact on the environment. In this activity, your students use the data gathered from their research and the in-class instruction materials to write a hypothesis about saving energy, preventing air pollution, and reducing utility bills. Step 3 of the home lighting energy saving detective scientific investigation is completed.

Levels:

Grades 4-7

Subject:

Real-life applications of science and social studies

Concepts:

- Replacing incandescent light bulbs with CFLs cuts air pollution, reduces utility bills, and saves energy
- A hypothesis is an educated guess based on preliminary data gathering and information from other resources

Skills:

Scientific investigation, observing, interpretive thinking

Objectives:

- Students will understand how to use a scientific investigation to make decisions that cut costs, save energy, and help the environment
- Students will complete step 3 of the scientific investigation

Materials:

- Energy and environment in-class instruction materials (pp. 25, 28)
- Energy-saving clue sheet (p. 27)
- Home Lighting Energy-Saver Detective Student Page
- "Hypothesis: What will happen if I use less energy?" (p. 6)

Background

Research indicates that people in the United States spend 6%-10% of their utility bill on residential lighting. The United States Department of Energy estimates that the average household could save as much as $400 a year by using energy-efficient appliances and lights. Before it has to be replaced, one compact fluorescent light (CFL) will prevent as much as 850 pounds of carbon dioxide (CO_2) air emissions and save consumers $40 on their utility bill.

The fill-in-the-blank sentences on "Hypothesis: What will happen if I use less energy?" correlates to the energy-saving equivalents and clues found on pages 23 and 27.

Getting ready

1) Copy pages 23 and 27 onto transparencies to help the student write their hypothesis.

2) Copy the worksheet, "Hypothesis: What will happen if I use less energy?" (p. 6), for each student in your class.

3) Copy page 6 on a transparency so you can show it to the class.

4) Copy page 28 on to a transparency.

5) Retrieve the transparency you made from page 25 for activity one.

6) Gather any other hypothesis formation materials you need.

Doing the Second Activity

1. Review the steps of the scientific investigation with the transparencies you made from pages 25 and 28, and the other available materials you gathered on hypothesis writing.

2. Discuss hypothesis formation.

3. Show the students the transparencies you made from pages 23 and 27 to provide them with an idea of the impact that they can have on the environment and their home utility bill when they use less energy.

4. Hand out the worksheet, "Hypothesis: What might happen if I use less energy?" (see Fig. 2.1).

5. Ask the students to use this worksheet to write a hypothesis using the notes they took in class, the data they gathered via their research, and the clues from pages 23 and 27.

6. Explain that the next step is to prove or disprove their hypothesis by analyzing their research and the data provided by the U.S. Department of Energy.

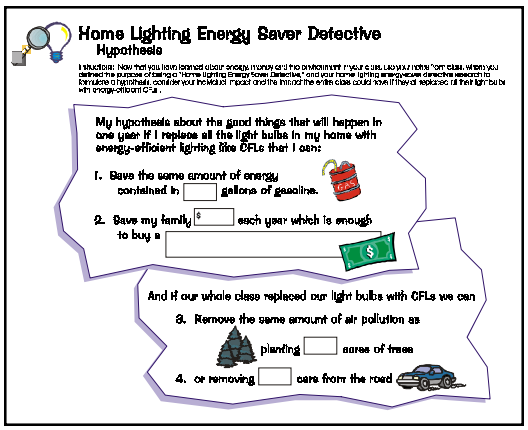
Home Lighting Energy Saver Detective
Hypothesis
My hypothesis about the good things that will happen in one year if I replace all the light bulbs in my home with energy-efficient lighting like CFLs that I can:
1. Save the same amount of energy contained in ____ gallons of gasoline.
2. Save my family $____ each year which is enough to buy a ____
And if our whole class replaced our light bulbs with CFLs we can
3. Remove the same amount of air pollution as planting ____ acres of trees
4. or removing ____ cars from the road

Figure 2.1.

Home Lighting Energy-Saver Detective

Hypothesis: What will happen if I use less energy?

Instructions: In this activity, you will make an educated guess about the good things that can happen when we use less energy. Look at your notes, research homework, and the energy saving clue sheet. Then, fill in the blanks below to the best of your ability.

If I replaced all the light bulbs in my home with energy-efficient lighting like the Energy Star Compact Fluorescent Light (CFL), in one year I could . . .

1. save the same amount of energy contained in _____ gallons of gasoline, and

2. save my family $ _____ which is enough to buy a _____

If our whole class replaced our light bulbs with CFLs, in one year we could . . .

3. remove the same amount of air pollution as

planting _____ acres of growing trees

4. or removing _____ cars from the road

Real life Math and Science Activities provided by U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy; Office of Building Technology, State and Community Programs